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# California Regional Water Quality Control Board Central Valley Region

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**DATE:** 22 August 2005

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**SUBJECT: RESPONSE TO REVIEW OF ANNUAL MONITORING REPORT – SOUTHERN  
SAN JOAQUIN VALLEY WATER QUALITY COALITION – TULE RIVER SUB-  
WATERSHED**

## Staff Review

On 1 April 2005, we received the Annual Monitoring Report (AMR) for the Southern San Joaquin Valley Water Quality Coalition's (SSJVWQC) Tule River Sub-watershed. This report was submitted by the SSJVWQC to meet the conditions of No. Resolution R5-2003-0105 and the associated Conditional Waiver of Waste Discharge Requirements for Discharges from Irrigated Lands (Conditional Waiver) adopted by the Regional Board on 11 July 2003.

Regional Board staff has reviewed the AMR to evaluate if the document accurately reflects the required reporting conditions detailed in the Conditional Waiver, the conditions set forth in the Tule River Sub-watershed's Monitoring and Reporting Program Plan (MRP Plan), the Quality Assurance Program Plan (QAPP), and to assess the quality of the data generated and the conclusions and recommendations presented. The review has been broken into three major categories: 1) discussion of administrative aspects; 2) discussion of analytical aspects; and 3) waiver compliance.

## Administrative Aspects

The Tule River Sub-watershed AMR was submitted on time, under appropriate cover letter, and included the major components required by the Conditional Waiver. Sampling was performed at the required frequency and the samples collected were analyzed for the desired constituents. Quality assurance/quality control (QA/QC) samples were collected at the appropriate frequency and the analytical results were reported in table format as required. However, a few administrative deficiencies were noted.

**Item 1:** A detailed map of the Sub-watershed needs to be included in the AMR. The map that is included is illegible with the exception of major features, and does not include the boundary established for the Sub-watershed. The Conditional Waiver program requires that the Coalition submit “Map(s) of watershed area showing irrigated lands (including crop type), drainage and discharge locations. Maps or discussion shall provide details of the watershed showing which fields are served by each drain.” Additionally, the MRP Plan requires detailed maps showing the land use and sampling locations (Resolution No. R5-2003-0105 pages 11 and 13).

**Item 2:** Chain of custody documentation needs to be performed in accordance with Attachment A of Resolution No. R5-2003-0826, pages 5 and 6. Chain of custody documents included in the AMR did not specify custody seals, number of bottles, and transportation method (ice chest cooled to 4 degrees Centigrade). No chain of custody documentation was presented for the samples sent from Twining to the subcontract laboratories.

**Item 3:** Communication reports need to be promptly submitted to the Regional Board when toxicity is detected or water quality objective exceeded. A communication report was sent for the 10 August 2004 sediment toxicity testing, but not until 22 December 2004. No communication report was submitted for the 12 July 2004 irrigation sampling that exceeded the Basin Plan limits for dissolved oxygen (DO) at Woods Central (4.2 mg/l DO), or the 8 August 2004 irrigation-sampling event (3.3 mg/l DO at Woods Central, and 6.3 DO at McCarthy Check). This is a violation of the terms of the Conditional Waiver. Communication Reports need to be submitted for exceedances of all water quality parameters, including pH, DO, fecal coliform, pesticides, and other parameters that have associated basin plan objectives.

**Item 4:** The AMR states that “Due to the dry year, there was no flow at the monitoring sites in the Deer Creek Basin or in the White River Basin during the irrigation or storm season covered by this annual report.” There is no documentation presented in the AMR to substantiate this claim (no field data sheets, gauging station data, or irrigation district records), nor is any procedure or trigger regarding storm water sampling presented in the MRP Plan. According to the Department of Water Resources, monthly precipitation records for the Tule River region, the month of January 2005 saw 153% to 195% of normal rainfall.

CIMIS data for the Porterville area indicates the following precipitation events occurred during the storm-water season:

- 31 December 2004 precipitation was 0.91 inch with evapotranspiration of 0.04 inch;
- 3 January 2005 precipitation was 0.44 inch with evapotranspiration of 0.01 inch;
- 8 January 2005 precipitation was 0.48 inch with evapotranspiration of 0.01 inch;
- 9 January 2005 precipitation was 0.46 inch with evapotranspiration of 0.01 inch;
- 10 January 2005 precipitation was 0.28 inch with evapotranspiration of 0.02 inch and;
- 11 January 2005 precipitation was 0.20 inch with evapotranspiration of 0.02 inch.

The Tule River Sub-watershed attempted to perform storm-water sampling on 17 January 2005; after six consecutive days of little or no precipitation.

The Tule River Sub-watershed needs to provide the Board with a reliable program containing guidelines for when storm water sampling will be performed. This program needs to include photographic and written documentation of all sampling sites and events; regardless of whether a sample was collected or not (location dry).

**Item 5:** A detailed land use map needs to be included in the AMR as required on page 13 of Resolution No. R5-2003-0105. The land use map included in the MRP Plan is of insufficient scale and detail to provide the required information.

**Item 6:** The pesticide use section of the AMR (pages 13 and 29) is inadequate. Information needs to be provided on where, when, and how pesticides are being applied. At a minimum, Township, Range and Section, along with the types and amounts of chemicals applied on these acreages and when, must be presented (Order No. R5-2003-0826, page 3).

### **Analytical Aspects**

Chemical analysis of samples collected for the AMR were run in accordance with the methods prescribed in Resolution No. R5-2003-0105, with the results presented in the required tabulated format (Tables 1-3 and 4-1). The review of the analytical results presented in the AMR had been broken down into the following categories: physical parameters; toxicity testing; quality control findings, and follow-up.

**Item 7:** Physical parameters are within excepted limits with the following exceptions. Total coliforms and E. Coli levels are elevated in the 10 August 2004 irrigation samples collected from Woods Central (500 and 70 MPN/100ml, respectively), and McCarthy Check (900 and 300 MPN/100ml, respectively). Total coliform is greatly elevated (greater than 1,600 MPN/100ml for both sites) in the storm water samples collected from the same locations (17 January 2005). The Tulare Lake Basin Plan stipulates a fecal coliform level of less than 200 MPN/100ml for not less than 5 samples in a 30-day period. According to the discussion in the AMR, fecal coliform concentrations should generally be somewhere between the concentrations for E. Coli and total coliforms. If this rational were applied to the McCarthy Check 10 August 2004 irrigation sample, the location would potentially exceed the Basin Plan objective.

Fecal coliform has been directly analyzed as part of the SWAMP sampling program conducted in the Tule River Sub-watershed. SWAMP detected fecal coliform at levels exceeding the Basin Plan objectives in the Tule River, the White River, Deer Creek, Elk Bayou, Deep Creek, and Bates Slough.

Dissolved oxygen levels exceeded Basin Plan water quality objectives in all of the irrigation samples collected (Woods Central 4.2 and 3.3 mg/l and McCarthy Check 6.3 mg/l). This is a violation of the Conditional Waiver and needed to be addressed in a Communication Report as specified on page 12 of Resolution No. R5-2003-0826.

**Item 8:** Toxicity testing results could only be evaluated from the reported findings; no raw data sheets were included with the results. A potential problem with this was noted in statistics preformed for the Woods Central fathead minnow bioassay (12 July 2004). The auxiliary tests section of the Aquatic Bioassay & Consulting Laboratories report (page A-24) states that the normality of the data set cannot be confirmed and that the equality of variance cannot be confirmed. The test results were accepted however, and no discussion of this problem was provided. Because information on Aquatic Bioassay & Consulting Laboratories standard operating procedures and/or their quality assurance program was not provided in

either the QAPP or the AMR, staff is unable to fully evaluate the magnitude of the problem. However, since the required statistical tests indicate that a problem exists with the data, the problem must be resolved, the test rerun, or the results rejected.

**Item 9:** Sediment toxicity testing for the 10 August 2004 irrigation-sampling event detected toxicity to *Hyalella azteca* at both sampling locations (Woods Central 12.5% survival and McCarthy Check 42.5% survival). The Tule River Sub-watershed attributes this toxicity to improper sample collection. However, neither the laboratory nor the Sub-watershed presented any evidence as to why the sample results should be invalidated. Toxicity was detected at these locations and the fact that the sample was collected 2 cm deeper than recommended, does not alter this conclusion.

**Item 10:** Follow-up studies to identified toxic events were not performed. A Toxicity Identification Evaluation (TIE) should have been performed for the sediment toxicity detected during the 10 August 2004 irrigation-sampling event. Re-sampling with additional samples collected upstream was required to aid in determining the limits of toxicity. The fact that toxicity was absent, or at low levels during storm-water sampling four months after it was first detected, has no bearing on the initial detection. Streambed deposits are transitory in nature.

The AMR does not contain any information regarding the required TIE analysis, re-sampling, or sampling upstream in response to the detected toxicity. This is a violation of the Conditional Waiver. Monitoring and Reporting Program, Order No. R5-2003-0105 (page 5) states that when toxicity is detected, a TIE and chemical monitoring shall be conducted to determine the cause of toxicity. At a minimum, a Phase 1 TIE should be conducted to determine the general class of chemical causing the toxicity. The results of the minimum TIE will determine the type of chemical monitoring necessary to identify the specific agents causing toxicity. In addition to TIEs, sites identified as toxic in the initial screen, shall be re-sampled to estimate the duration of the toxic event. Samples should also be collected upstream of the initial sampling point to help determine the source of the toxicity. Additionally, information must be collected from dischargers on the type of management practices that are being used, the degree to which they are being implemented within the watershed, and how effective they are in protecting waters of the State through all phases of monitoring. Communication Reports are the method by which the Regional Board is notified of a water quality exceedance. Notification needs to be prompt. At a minimum, the Communication Report shall include: a description of the management practice(s) being evaluated; methodology for evaluating the effectiveness of the practice (including sampling and QA/QC plans); and the involvement by stakeholders and agencies in developing, implementing, and evaluating the project (Monitoring and Reporting Program, Order No. R5-2003-0105, pages 12 and 13).

### **Conditional Waiver Compliance**

Certain aspects of the Conditional Waiver program may not have been completely addressed in the Watershed Evaluation, QAPP, and MRP Plan, and subsequently, were not included in the AMR. While these documents have received prior approval by the Board, it is staff's position that additional information and/or actions should be undertaken at this time in order to fully comply with the Conditional Waiver program. These actions include: increasing the number of sampling points; the frequency of sampling; and actions taken to address water quality impacts.

**Item 11:** The Monitoring and Reporting Program Order No. R5-2003-0105 (page 8), states that the number of monitoring sites shall be based on acreages and watershed characteristics sufficient to allow for the calculation of load discharged for every waste parameter.

The current monitoring program consists of six sites (two on the Tule River, two on Deer Creek, and two on the White River). The Tule River sites were the only locations sampled during the preparation of the AMR. In the AMR Data Assessment section (page 26), it states that, “the monitoring sites on the Tule River were selected for complete coverage of the water quality of the Tule River Basin within Tulare County”. It is unclear how two points approximately 16 miles apart are capable of filling this claim. The Surface Water Ambient Monitoring Program (SWAMP) together with UC Davis (Central Valley Regional Water Quality Control Board Conditional Waiver for Irrigated Agriculture Monitoring Program, Phase II) has sampled the Tule River and selected surrounding waterbodies. These programs found: 1) Ceriodaphnia survival rates of 75% and 90% in samples collected from the north branch of the Tule River, both east and west of Highway 99; 2) detected statistically significant difference in the growth of *Selenastrum* in samples collected from the Tule River at Popular Avenue; and 3) detected fecal coliform at concentrations of 500 MPN/100 ml and 300 MPN/100 ml (potentially above the Basin Plan objectives) from the Tule River west of Highway 99.

The Tule River flows west of the McCarthy Check (western most sampling point) approximately 9 miles, to the western boundary of Tulare County where it continues on into Kings County. Approximately one mile west of the McCarthy Check is the confluence of Elk Bayou and the Tule River. Elk Bayou together with Outside Creek, connect the Kaweah River to the north, with the Tule River to the south (a distance of approximately 20 miles). Elk Bayou is currently not being monitored by the Coalition.

The two monitoring points on Deer Creek and two on White River were not sampled for the AMR; however additional sites were sampled on Deer Creek at part of SWAMP. SWAMP sampling detected statistically significant reduced growth to *Selenastrum* at two sites (one between Highway 65 and Highway 99, and one west of Highway 99). Neither, SWAMP or the UC Davis program has collected samples from the White River to date.

**Item 12:** The Conditional Waiver requires that all major drainages must be part of baseline monitoring. At least 20% of the intermediate drainages must be monitored during the first year and the second 20% the second year, etc (Monitoring and Reporting Program, Order No. R5-2003-0105, page 10). The review of the AMR found no mention of additional sampling proposed for either the major drainages, or on the required 20% of the intermediate drainages. This is a violation of the terms of the Conditional Waiver and needs to be addressed.

A study of aerial photographs and topographic maps of the region indicate that Porter Slough, Elk Bayou, Bates Slough, and Deep Creek are, at a minimum, secondary or intermediate drainages, and should be considered for inclusion in the monitoring program. In addition to these natural drainages, a large number of irrigation canals appear to terminate into natural waterbodies. A Tule River Sub-Watershed Map presented as part of the Watershed Evaluation Report (unknown figure #), indicates potential connections (canals) that exist between Porter Slough and the North Fork of the Tule River; between the Tule River and its various forks; and between sections of Deer Creek west of the Pixley Nation Wildlife Refuge. These locations need to be evaluated for inclusion in the monitoring program.

**Item 13:** The frequency of sampling set forth in the Conditional Waiver program is once a month during the irrigation season and twice during the storm season. Additionally, when toxicity is discovered, re-sampling is to be preformed and samples are to be collected upstream to aid in determining the limits of toxicity. The Tule River Sub-watershed AMR does not contain any information regarding re-sampling, or sampling upstream in response to the detected toxic events.

**Item 14:** The Conditional Waiver requires that when monitoring results indicate that water quality objectives are exceeded in the surface waters of the Coalition Group area, the Coalition Group shall submit a Communication Report describing how it will evaluate the effectiveness of one or more management practice(s) at preventing discharge of COCs to surface waters. The selection of management practice evaluation projects shall include consideration of the contribution of target COCs to known water quality impairments, potential application of the management practices over a broad geographic area and large spectrum of crops, and ease and immediacy of possible implementation. While compliance is required by the Conditional Waiver Program; its Staff's understanding that the management practices issue is currently being defined. Compliance will be an evolving process and the item is mean as an informational issue to stimulate the Sub-watershed in gathering the information necessary for the program to advance.